ANTICIPATING DISASTER : PLANNING FOR MAN-MADE CATASTROPHIES IN ONTARIO MUNICIPALITIES

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ANTICIPATING DISASTER : PLANNING FOR MAN-MADE CATASTROPHIES IN ONTARIO MUNICIPALITIES

A. INTRODUCTION : THE CONTEXT OF DISASTER PLANNING

1. Overview

The use of technology has often been man's response to physical problems he encountered in his environment. Technology has evolved to the point where man can protect himself from many of the effects of natural disaster. Advances in the earth sciences, medicine and in the construction field have provided protective and preventative measures which have served to eliminate, or at least reduce, the sudden misfortune resulting from natural disasters. Today, more and more attention is being focussed on another class of hazard, man-made disasters.

There has been a progressive increase in the number of man-made disasters since the mid 1970's. In Ontario, the Texaco plant fire (Port Credit, 1978), the North York gas leak (1978), the Oakville pesticides fire (1978), the Mississauga train derailment (1980) and the town fire in Essex (1980) all serve as examples of this trend. The province of Ontario is not alone in it's experiences with man-made disasters. Throughout North America, the media coverage given such events as the Three Mile Island nuclear accident in Pennsylvania (1979) and the Eastern Boeing 727 crash (Kennedy Airport, 1975) resulted in increased public awareness of the threat of man-made disasters. This awareness has fostered a demand for more information pertaining to such accidents, as well as a demand for action to reduce their occurrence and mitigate their effect on persons and property. Such demands have partially been met by a wave of publications, research papers and conferences addressing the nature of man-made disasters and the

form that prevention and preparation for man-made disasters should take. This recent surge in disaster literature, however, differs from previous disaster research and related publications.

2. Man-Made Disaster Literature

Accidents directly related to man's industrial-technological activities began to surface in the mid 1970's. Whether the sudden publicity given such events represented an absolute increase in their occurance cannot be ascertained. It is quite clear, however, that industrial and transportation related accidents did begin to affect more persons and property, and what had previously been labelled "industrial accidents" became "disasters" because of their changing nature (scope, impact and implications). The literature that has been published concerning these man-made disasters concentrates on preparedness more than any previous disaster literature. Other characteristics of this body of literature can be summarized as follows:

1. The focus of the literature is not on removing the threat completely. Most researchers treat certain categories of man-made disasters as a necessary evil associated with man's increasing industrial activity and use of technology.
2. Unlike environmental disaster literature, this type of disaster literature does not attempt to codify the role and response of the individual in mitigating the affects of disaster, but rather stresses the role of the community.

3. The question of responsibility is more central in literature concerning man-made disasters than in the literature addressing natural disasters. This is directly related to the fact that man-made disasters are the result of human action.
4. A more multi-disciplinary approach is exhibited in the literature. Administrators, planners, private industry and politicians are becoming more involved in disaster research. The disaster research field had previously been dominated by natural and physical scientists.

A similar characteristic of the literature on man-made disasters and literature concerning other forms of disaster is the presence of methods or techniques for emergency response. The responsibility for the development and implementation of these methods and techniques is assigned to all levels of government; municipal, provincial and federal.

3. Jurisdictional Responsibility for Disaster Planning

Under the provisions of the British North America Act, both the Federal and Provincial governments have been given powers which have been interpreted by the courts as powers to pass laws with respect to emergencies. As a result, the emergency planning field has been plagued with jurisdictional arguments.

Section 91 of the BNA Act, which outlines the Federal government's sphere of jurisdiction and powers, contains a clause which gives the Federal

government the right to make laws to ensure 'the peace, order and good government of Canada'. This clause, often referred to as the 'basket clause', has been interpreted by the courts to give the Federal government supremacy with respect to otherwise undelegated matters.[1] It is this clause that has provided for a Federal role in emergency planning. Section 92.13, however, gives the provincial government the authority to pass laws and make regulations to safeguard the property and civil rights of its citizens. Without doubt, disasters whether natural or man-made affect property and the right of the individual to the continued use of his or her property. As such, provincial involement in emergency planning can also be justified.

Both the Federal and Provincial governments have used these powers granted them in the BNA Act to legislate and play an active role in emergency planning. Initially, the Federal government's role was in terms of the allocation of resources and the maintenance of public services during wartime.[2] This preoccupation with wartime planning continued throughout the 1940's and 1950's and finally led to the creation of the Emergency Measures Organization. This organization, with it's primary mandate remaining as planning and preparation for wartime, was abandoned in 1973 and Emergency Planning Canada created. Emergency Planning Canada now plays the major role in emergency preparedness at the Federal level.

[1] D.C. Hefferon, Landuse Planning, Volume 1, Osgoode Hall Law School, Toronto, Ontario, 1979-80, p.2.1.9.

[2] P. Timmerman, Emergency Planning in Ontario: A critical history and Analysis. Institute for Environmental Studies, Working Paper ERR-9, University of Toronto, Toronto, 1980, p.8.

The history of emergency planning at the Provincial level parallels the Federal role in many areas and Ontario is no exception. Until 1974, emergency planning was the responsibility of the Emergency Measures ranch. Unlike the Federal EMO program, the EMB focussed on peace time emergencies. The emergency measures branch was disbanded at the end of 1974, its staff and servicing equipment absorbed by other agencies and ministries. The government of Ontario decided that as of January 1, 1976, the activity of dealing with peace time emergencies was to be divided among those ministries whose programs qualify them to react to certain emergencies.[3] These ministries are called 'Lead Ministries' meaning that in planning for and responding to emergency they take the lead role.[4]

The Provincial concept of emergency response, except in those areas where municipal governments do not exist, sees Provincial capabilities offered and utilized in support of municipal response.[5] The Federal concept of emergency response, as suggested by the responsibilities of Emergency Planning Canada, also reflects that the municipality should assume a primary responsibility for emergency planning and response. Federal efforts in the area of emergency response concentrate on the supervision of provincial and municipal efforts, the provision of advice when requested, the funding of disaster research and the provision of financial assistance to municipalities in some cases. How municipalities accept and fulfill their responsibility is the subject of part two of this paper.

[3] Ibid, p.9-12.

[4] ONTARIO. Lead Ministry in: Forest Fire and Flood Emergencies, Ministry of Natural Resources (Ontario), Toronto, p.1.

[5] C.L. Kirby, Capabilities of Response - Provincial Capabilities, paper presented at Emergency Preparedness for the Eighties Conference, Toronto, November 16, 1980. p.1.

B. MUNICIPAL EMERGENCY PREPAREDNESS IN ONTARIO

The Municipality has always been at the centre of emergency planning in Ontario. A research survey conducted during January and February of 1981, served to detail this involvement in terms of the tasks and preparations now in existance with respect to Ontario Municipalities. This section presents the findings.

1. Research Methodology

To evaluate emergency preparedness at the municipal level in Ontario, survey research was utilized. This technique was chosen because the data sought on municipal emergency plans was not available from any other single source. The sampling frame used for the survey was the 1980 Municipal directory which listed all incorporated municipalities of Ontario. This included cities, towns, villages, townships, counties, district municipalities and regional municipalities. A municipality meeting one or more of the following criteria was included in the survey:

1. A population in 1979 of 10,000 or more.
2. The occurrence of a man-made disaster (according to the author's knowledge) in the last ten years.
3. A heavy concentration of activity in the transportation, mining or construction industry.
4. Proximity to large industrial, defence or energy facilities.

The selection process resulted in a sample size of 157 municipalities to which a formal questionnaire was mailed. A total of 115 responses was received over the duration of the study. Municipalities that responded to the survey were located throughout the province of Ontario and included cities, towns, villages, counties, boroughs, regional municipalities

and district municipalities. A frequency distribution of respondents according to municipal structure indicated that villages and townships were extremely under represented in the survey considering their overall representation in the province. Two factors may have contributed to this low representation. First, few met the population criteria (10,000 in 1979) and therefore did not qualify for inclusion in the sample. Secondly, townships that did respond indicated that they had little active involvement in the emergency planning field. Perhaps the failure of a greater number of townships to respond resulted from this lack of involvement.

The surveyed municipalities were queried as to whether or not the municipality had experienced a man-made disaster or emergency situation in the last ten years. In order to provide some guidelines with respect to what constituted a man-made disaster or emergency, the following were set out:

1. A major disruption in social services (transportation, water, hydro, etc.); or
2. Economic losses (property and expenses) greater than $750,000; or
3. The death of 15 or more individuals; or
4. The injury of 75 or more individuals.

Of the 112 municipalities that responded to this question, 22.3% had experienced an incident that involved one or more of the conditions. The type of accidents (disasters) most often referred to included fires and explosions at industrial factories, and various train accidents involving derailment or chemical spills. Many municipalities mentioned experience in dealing with natural disasters, particularly storm conditions,

but these were not included as an appropriate response since the purpose of the survey was to investigate disasters that resulted from the actions of man or a technological error.

The remaining survey questions addressed the particular efforts of the municipality associated with emergency preparedness in the form of vulnerability studies, inventory of resources and the creation of an emergency plan.

2. Vulnerability Studies

A study of vulnerability is considered the first step or task a municipality should undertake with respect to efforts directed at emergency preparedness. In essence, a vulnerability study is the completion of a systematic process of evaluation directed at identifying what form a man-made disaster is likely to take within a particular municipality. Only 49% of the surveyed municipalities had completed such a process. This is significant in that a greater percentage of the municipalities had proceeded with an inventory of resources and the creation of an emergency plan without first conducting an analysis to discover what form of disasters or accidents were most likely to occur in the municipality.

The completion of vulnerability studies, where undertaken, coincided with the rise of publicity given man-made disasters. Vulnerability studies in the majority of the municipalities had been completed or revised in 1980. The responsibility for the completion of the study varied from municipality to municipality with a special emergency committee or the Municipal Fire Department being responsible in most cases. Although it was more likely that a municipality having experienced a disaster would

have conducted a vulnerability study there was no relationship between the completion of such a study and the population size or municipal structure of the municipality.

3. Inventory of Resources

The major purpose in completing and maintaining an up to date inventory of resources is to provide an easily accessible list of service equipment, communication facilities and emergency medical services which would be available if required. The majority of the municipalities surveyed (73%) had completed a resource inventory and an additional 5% of the municipalities were in the process of completing one. In most of the municipalities the inventory had been revised in the last year, however, in just over 18% of the municipalities the inventory had been completed prior to 1978 and a revision had not been undertaken.

The responsibility for completing the resource inventory varied between municipalities and survey results indicated that overall, eleven different departments or agencies could be identified as playing a primary role in the resource inventory task. The three departments or agencies most often mentioned were an Emergency Committee (consisting of senior administrative staff), the Fire Department, or the Mayor (in the case of smaller communities).

4. Creation of an Emergency Plan

An emergency plan was in existence in 71% of the municipalities surveyed. In addition, another 10% reported that they were presently preparing such a plan. The majority of these municipal emergency plans were completed after 1975 and the peak years for the completion of municipal emergency plans

in Ontario were 1975 and 1980 (16.7% and 19.3% respectively).

The responsibility for creating the municipal emergency plan rested primarily with an Emergency Committee in 36.4% of the municipalities. In 13.5% of the municipalities the plan had been developed at the regional level. The reason most often given for this was to ensure continuity in content and provide mutual aid links between municipalities within a region. A remarkably small number of the municipalities had a plan that had been created by a private organization or firm or by the province of Ontario. These municipalities in which this occurred were characterized by the dominance of one particular industrial firm or corporation and a small population which was dependent upon that particular firm. The effectiveness of the plans developed by private firms or by a specific branch of the Provincial government is questionable. In many cases, the municipality was not sure of the contents of the plan and in one particular case, the municipality was aware that a plan for the possible evacuation of the municipality existed but were unaware of where to obtain a copy or how the plan would be executed in a time of emergency!

In order to determine if Ontario municipalities were incorporating the major components or principles of an emergency plan, as outlined in contemporary literature, the municipality was asked to indicate characteristics exhibited by the plan. The majority of the responses were favourable and out of fifteen characteristics listed, nine were present in at least 75% of the municipal plans (Figure 1). Those characteristics which were absent in over 50% of the plans included a mandatory review process, the identification of emergency supplies of power and water, a discussion of insurance provisions and the existance of a public warning system.

Although not absent to the same degree as the previously mentioned characteristics, only 57% of the municipalities outlined the creation and structure of a public information system and/or centre during the time of an emergency. This should be viewed as a serious ommission on the part of the municipalities involved since the constant flow of accurate information during an emergency situation is of vital importance in prompt recovery.

The final two concerns addressed in the survey with respect to the creation of an emergency plan were public involvement in the development of the plan and the public's awareness of the plan's contents. In approximately 70% of the municipalities surveyed, the public had not been notified during the development of the plan and no opportunity had been given to the public for input into the development or content of the plan. Subsequently, the public's awareness of the existance and contents of the plan was extremely low.

C. SUMMARY AND CONCLUSIONS

Federal and Provincial emergency planning programs have over the years been aimed at supporting municipal efforts directed at emergency preparedness. This support has been in terms of financial assistance, the provision of advice, the co-ordination of municipal efforts, the funding of research, the provision of equipment and services during the emergency and the maintenance of information systems to serve the public, government and educational institutions. At the Federal level, Emergency Planning Canada assumes these responsibilities whereas the province of Ontario has created an administrative structure referred to as the "Lead Ministry Concept".

Figure 1

MUNICIPAL EMERGENCY PLAN CHARACTERISTICS IN ONTARIO 1980

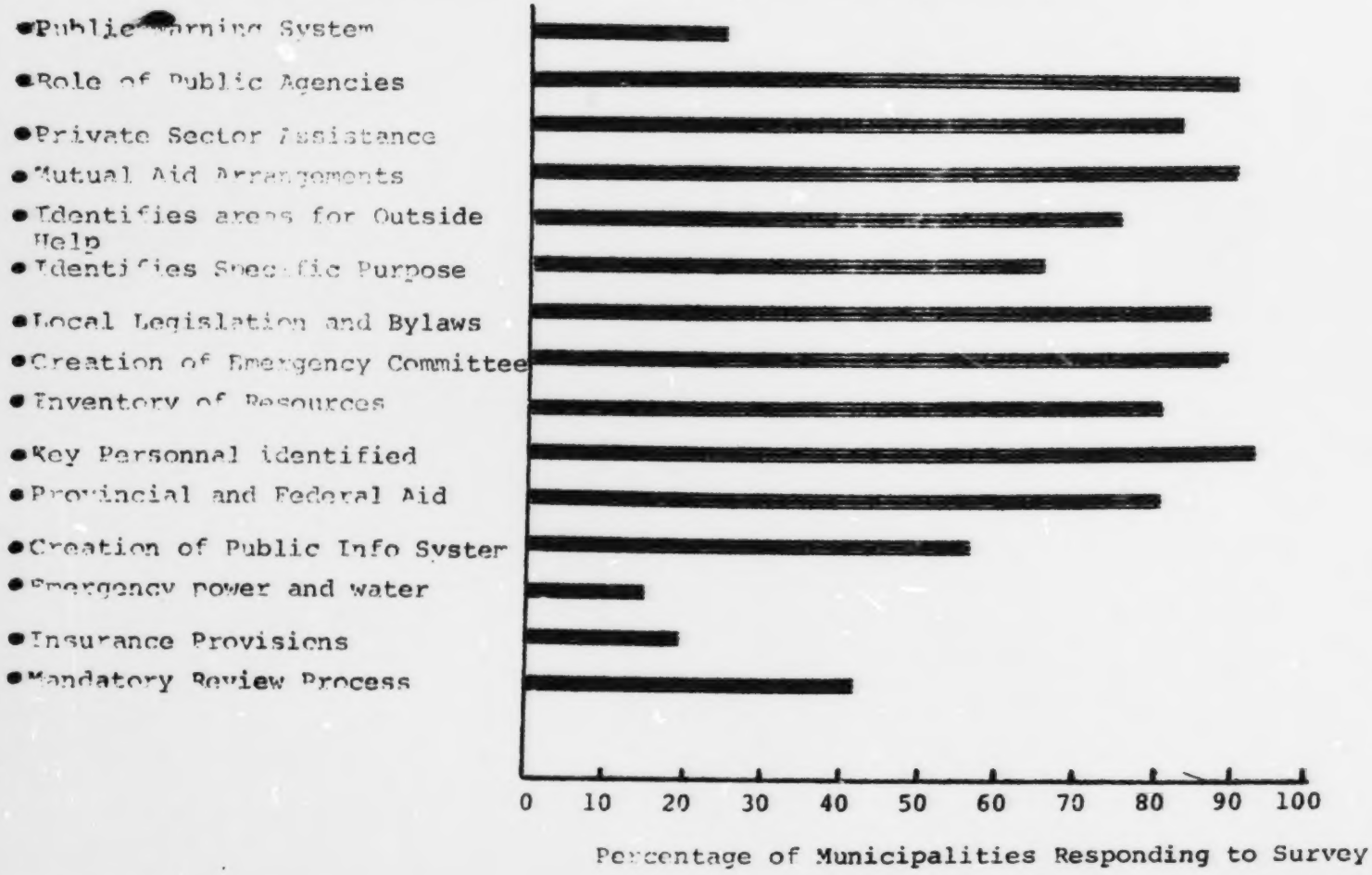
Public Warning System
Role of Public Agencies
Private Sector Assistance
Mutual Aid Arrangements
Identifies areas for Outside Help
Identifies Specific Purpose
Local Legislation and Bylaws
Creation of Emergency Committee
Inventory of Resources
Key Personnal identified
Provincial and Federal Aid
Creation of Public Info Syster
Emergency power and water
Insurance Provisions
Mandatory Review Process
0 10 20 30 40 50 60 70 80 90 100
Percentage of Municipalities Responding to Survey

Figure 2: COUNTIES, DISTRICTS, REGIONAL AND DISTRICT MUNICIPALITIES OF ONTARIO WI
A MUNICIPAL EMERGENCEY PLAN

LEGEND

▲ No Plan

● Plan

○ No Response

1. Bruce
2. Middlesex
3. Perth
4. Oxford
5. Brant
6. Hamilton-Wentworth
7. Waterloo
8. Wellington
9. Halton
10. Dufferin
11. York
12. Metropolitan Toronto
13. Durnam
14. Northumberland
15. Lennox and Addington
16. Grenville
17. Dundas
18. Stormo
19. Glenga
20. Presco
21. Russel
22. Petero
23. Halibu
24. Lanark

A recent investigation into municipal emergency preparedness as it exists in Ontario municipalities was based on a survey of 157 Ontario municipalities conducted in January and February of 1981. After compiling the responses and statistically analizing them, several conclusions can be made:

1. The threat of man-made disasters in Ontario is real. In the last ten years, over 21% of the municipalities surveyed had experienced a disaster that resulted from a human or technological error. Although the survey may have over estimated the occurance of man-made disasters due to the inclusion by some municipalities of what may be considered natural disasters, the omission by other municipalities may have corrected this over estimation. Several additional emergencies which fell into the category of man-made disasters were identified after survey analysis.

2. In general, the majority of Ontario municipalities are meeting their responsibilities with respect to the three primary tasks associated with emergency preparedness, (Vulnerability Study, Inventory of Resources and the Creation of an Emergency Plan). Survey results indicated that the majority of municipalities were proceeding with resource inventories and the creation of an emergency plan without first considering the type of emergency to be expected. Without carrying out such an evaluation and without creating scenarios which account for the

2. (continued)

nature, scale, effects and impacts of potential emergencies, municipalities are reducing their capabilities to assign priorities and assure that the municipal response is planned and co-ordinated.

3. Municipal emergency plans in Ontario are fairly comprehensive and address the major principles outlined in contemporary literature. Shortcomings exist however, with respect to the inclusion of a mandatory review process for the plan, the identification of emergency power and water supplies, a discussion of insurance provisions and the creation of a public warning system.

4. Many municipalities in Ontario are not placing enough emphasis on the creation of a public information system-centre during emergency situations as part of their municipal emergency plans.

5. The responsibility for emergency preparedness does not rest with one particular municipal structure in Ontario. Cities, towns, villages, townships, counties, district and regional municipalities have all been involved in one or more of the tasks associated with emergency preparedness.

6. The responsibility for emergency preparedness in Ontario municipalities varies between municipalities and the tasks associated with emergency preparedness are fulfilled by various departments and agencies within the municipality's administrative structure. More comprehensive and uniform planning might occur if the responsibility for emergency

6. (continued)

preparedness was centred in a smaller number of departments and agencies across the province.

7. Municipalities where the emergency plan has been developed by a private organization or a branch of the provincial government are to a large degree unaware of the contents of the plan or the process of implementing the plan. This finding suggests that if required, the implementation of the plan could prove chaotic and any advantages resulting from having a prearranged plan of action would be lost.

8. The majority of Ontario municipalities have vulnerability studies and resource inventories that have been completed or revised in the last two years. Unfortunately, the same cannot be said with respect to a number of municipal emergency plans. Many of these plans, especially in the smaller communities, were developed during the existance of the EMO program. Since the demise of the program financial restrictions have not allowed these plans to be undated or revised.

9. Public awareness of the existance and contents of municipal emergency plans is very low in Ontario. A great deal of this lack of awareness is due to the fact that public involvement in emergency planning is not encouraged. Without public awareness and knowledge of the plan's contents, successful implementation of the plan is unlikely.

In addition to these conclusions specifically addressing municipal emergency preparedness in Ontario, two additional conclusions related to emergency planning in general can be made;

10. A great deal of the emergency planning that has occurred in Canada has been directed at national or civil defence. A substantial gap exists in disaster research related to risk analysis dealing with disasters arising from human or technological error.

11. A legislative basis for emergency planning does not exist at the Provincial level in Ontario. Planning intervention regardless of its purpose (i.e. landuse control, environmental protection, etc.) becomes more focussed, effective and implementable when backed by legal statutes. At present, emergency planning at the Provincial level lacks this solid basis on which to proceed with intervention.

In summary, municipal emergency planning in Ontario is just beginning to gain the prominence it deserves. A great deal of the recent surge in interest is due to the growing awareness by the public of the threat of disasters associated with human or technological errors. The major obstacle facing the success of municipal efforts directed at emergency preparedness is the ability of municipal authorities to integrate the public into planning and preparation processes in order to guarantee their support and co-operation during emergency situations.

ABOUT THE AUTHOR

Jean E. Faulds is a recent graduate of the Department of Urban and Regional Planning at Ryerson Polytechnical Institute, and is currently enrolled in the graduate program of the York University Faculty of Environmental Studies. She is also active in community affairs in Toronto, and sits as a member of the Board of Directors of Woodgreen Community Centre.

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